

Decay in Forest Trees

Tennessee Department of Agriculture, Division of Forestry



Decay destroys more wood each year than all other factors combined, and makes up over ¾ of all losses to insect and disease.

Decay is introduced to trees by means of

- fire scars
 - broken limbs
 - insect entry
 - logging wounds
 - trampling by livestock
 - sprouts growing from upper portions of tall stumps
- Fire scars and broken tops are the leading causes of decay

Decay is most damaging when it occurs at the base of the tree, since the butt log is generally the most valuable.

To prevent and minimize decay

- Prevent fires and reduce the amount of burnable material
- Thin young stands to help reduce breakage of spindly trees during storms, and to strengthen trees against insect attack
- Maintain a diverse forest, which is more resistant to insect and disease outbreak
- Harvest mature trees before losses to decay exceed growth
- Cut low stumps
- Remove trees with signs of decay or with major injuries
- Use “bumper trees” along skid trails to absorb the impact of logs being dragged past, then remove the bumper trees
- Exclude livestock from the woods
- Harvest and regenerate mature forests with a large proportion (40%, perhaps) of trees showing decay symptoms
- Perform timber stand improvement in young stands

Young trees usually have less decay than old trees and are better able to resist decay once it is introduced. **Sapling and pole timber can be thinned**, taking less desirable individuals:

- Injured or decayed
- Poorly shaped (bent, spindly, etc.)
- Less valued species
- Over-topped
- Crowded
- All but the single best sprout on a stump (lowest, healthiest)

Signs of decay and approximate percentage chance of decay being present include

- Mushrooms or “conks” growing from tree trunks (100%)
- Open fire scars (99%)
- Closed fire scars (60+ %)
- Dead or damaged tops (60%)
- Unsound branch stubs (30%)
- Mechanical injuries (25%)
- Healed-over large branch stubs (20-25%)
- Sound branch stubs (10%)
- Swellings (10%)
- Vertical scars (“rolled-in” scars are most serious)
- Cankers
- Oozing
- Sound branch stubs

Fresh wounds at high risk of decay include

- Broken main stems
- Branch stubs greater than 3” in diameter
- Wounds deeper than 2”
- Wounds within 16” of the ground
- Bark removed from areas of one square foot
- Stump sprouts originating high on the stump
- Exposed or damaged roots

Fire was once a leading cause of decay. Fire defense is not easy, but some options include:

- Prescribed fire to reduce the intensity and rate of spread of wildfire. Prescribed fire is normally used in pines larger than 5” in diameter and 30’ tall. Under-burning in hardwood forests is still experimental and is not recommended
- Maintain roads and plowed trails as fire breaks and access routes
- Thin pine stands to reduce fuel loading and improve access
- In high-value hardwoods, saw fallen trees into pieces to reduce fire intensity and aid decomposition

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